

CLAIMS

Claims 1-18 are pending. All pending claims and their current status have been reproduced below. Please amend claims 1, 7 and 13 as indicated herein.

1. (Currently Amended) A method of detecting at least one of a pan and a zoom in a video sequence, comprising:

selecting a set of frames from a video sequence from an image database;
determining a set of motion vectors for each frame in the set of frames using a motion analysis block executed by a processor;
determining a motion angle for each motion vector using the motion analysis block;
identifying at least two largest regions in each frame using a look-ahead detector executed by the processor, wherein the first largest region includes having motion vectors with substantially similar motion angles and occupies a largest number of pixels in a frame and the second largest region includes motion vectors with substantially similar motion angles and occupies a second largest number of pixels in a frame;
determining percentages of each frame covered by each of the at least two largest regions using the look-ahead detector;
determining a statistical measure of the motion angles for at least one of the two largest regions using the look-ahead detector; and
comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence using the look-ahead detector.

2. (Original) The method of claim 1, wherein the step of selecting a set of video frames from a video sequence further comprises:
identifying a scene cut between two frames in the video sequence; and responsive to the identification of a scene cut,
selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut.

3. (Original) The method of claim 2, wherein frame differences and motion information are used to identify a scene cut.

4. (Previously Presented) The method of claim 1, wherein the motion angles are computed in one from the group of coordinate systems consisting of polar, Cartesian, spherical and cylindrical coordinate systems.

5. (Original) The method of claim 1, wherein the percentages of each frame covered by the at least two largest regions are determined from the number of pixels in each region as a percentage of the total number of pixels in a frame.

6. (Original) The method of claim 1, wherein the statistical measure is a variance.

7. (Currently Amended) A system for detecting at least one of a pan and a zoom in a video sequence, comprising:

a processor; and

a computer readable storage medium coupled to the processor, the computer readable storage medium storing program code executable by the processor, the program code comprising:

a preprocessor for selecting a set of frames from a video sequence; and

a motion analyzer for determining a set of motion vectors for each frame in the set of frames, determining a motion angle for each motion vector;

identifying at least two largest regions in each frame wherein the first largest region includes having motion vectors with substantially similar motion angles and occupies a largest number of pixels in a frame and the second largest region includes motion vectors with substantially similar motion angles and occupies a second largest number of pixels in a frame, determining percentages of each frame covered by each of the at least two largest regions, determining a

statistical measure of the motion angles for at least one of the two largest regions, and comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence.

8. (Original) The system of claim 7, wherein the step of selecting a set of video frames from a video sequence further comprises

- identifying a scene cut between two frames in the video sequence and responsive to the identification of a scene cut, and
- selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut.

9. (Original) The system of claim 8, wherein frame differences and motion information are used to identify a scene cut.

10. (Previously Presented) The system of claim 7, wherein the motion angles are computed in one from the group of coordinate systems consisting of polar, Cartesian, spherical and cylindrical coordinate systems.

11. (Original) The system of claim 7, wherein the percentages of each frame covered by the at least two largest regions are determined from the number of pixels in each region as a percentage of the total number of pixels in a frame.

12. (Original) The system of claim 7, wherein the statistical measure is a variance.

13. (Currently Amended) A computer-readable medium having stored thereon instructions which, when executed by a processor in a system for detecting at least one of a pan and a zoom in a video sequence, cause the processor to perform the operations of:

- selecting a set of frames from a video sequence;
- determining a set of motion vectors for each frame in the set of frames;
- determining a motion angle for each motion vector;
- identifying at least two largest regions in each frame, wherein the first largest region includes having motion vectors with substantially similar motion angles and occupies a largest number of pixels in a frame and the second largest region includes motion vectors with substantially similar motion angles and occupies a second largest number of pixels in a frame;

determining percentages of each frame covered by the at least two largest regions;
determining a statistical measure of the motion angles for at least one of the two
largest regions; and
comparing the percentages and statistical measure to threshold values to identify at
least one of a pan or a zoom in the video sequence.

14. (Original) The computer-readable medium of claim 13, wherein the step of selecting a set of video frames from a video sequence further comprises:
 - identifying a scene cut between two frames in the video sequence; and responsive to the identification of a scene cut,
 - selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut.
15. (Original) The computer-readable medium of claim 13, wherein frame differences and motion information are used to identify a scene cut.
16. (Previously Presented) The computer-readable medium of claim 13, wherein the motion angles are computed in polar coordinates.
17. (Original) The computer-readable medium of claim 13, wherein the percentages of each frame covered by the at least two largest regions are determined from the number of pixels in each region as a percentage of the total number of pixels in a frame.
18. (Original) The computer-readable medium of claim 13, wherein the statistical measure is a variance.